NASA Facts ON LINE

AMES RESEARCH CENTER

National Aeronautics and Space Administration

Ames Research Center, Moffett Field, California 94035-1000

415-604-9000

40- by 80- Foot Wind Tunnel

(40 X 80)

Primary Use:

The facility is used primarily for large-scale or full-scale testing of aircraft and rotorcraft including high-lift and noise suppression development for subsonic and high speed transports, powered lift, high angle-of-attack for fighter aircraft and propulsion systems.

Capability:

- MachNumber: 0 - 0.45
- Reynolds Number per foot: 3 X 106
- Stagnation Pressure: Atmospheric
- Temperature Range: 485° - 580° R
- Closed circuit, single return, continuous flow, closed throat wind tunnel with low turbulence.
- Model support system available includes a 3 strut arrangement with a nose or tail variable height strut, a semispan mount and a sting. The entire model support can be yawed a total of 290°.
- Six components of force and moment are measured by the mechanical, external balance under the test section or by internal strain-gage balances in the sting or rotor testbeds.
- Test section is lined with a 6" deep acoustic lining.
- Model utilities include: temperature controlled 3000 psi air, 3000 psi hydraulics, jet fuel, cooling water, 24V DC aircraft power and 400 cycle and 150 cycle variable frequency power.
- Data system
    - Data are acquired through an open architecture system based on the VMEbus, using Pacific and Precision Filter conditioning units.
        - Analog input data can be recorded on 400 channels with a maximum total sampling rate of 10,000,000 samples per second.

        - Some Real-time processing can be performed through an SGI 4D/440 computer.
    - Pressures can be recorded using Pressure Systems Incorporated (PSI) equipment.
    - Digital data can be recorded on an additional 20 channels utilizing an RS-485 interface.
    - Main computations are performed on a SGI Crimson computer.

Status:

- **Originally Built** - 1944
- **Major Mods** - Upgraded 1982 to 300 knots
- **Current Status** - Undergoing major modification to add 42-inch deep acoustic test-section liner.
- **Future Status** - Operational: October, 1997

Utilization:

- **Who/How Much** - Estimated; industry and cooperative research 50%, other government agencies 25%, NASA 25%.
- **User Fees** - T.B D.
- **Legislated Restrictions** - None. National facility available to industry, DOD and NASA development and research.

Capital Value:

Replacement Cost: $164 Million

For further information, contact

NASA Ames Research Center

MS 204-12

Moffett Field, CA 94035-1000